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 G4V

(71) Applicants
 Coin Operated Parts
 Service Limited,
 Meadow Mill, Water
 Street, Stockport,
 Cheshire SK1 2BU

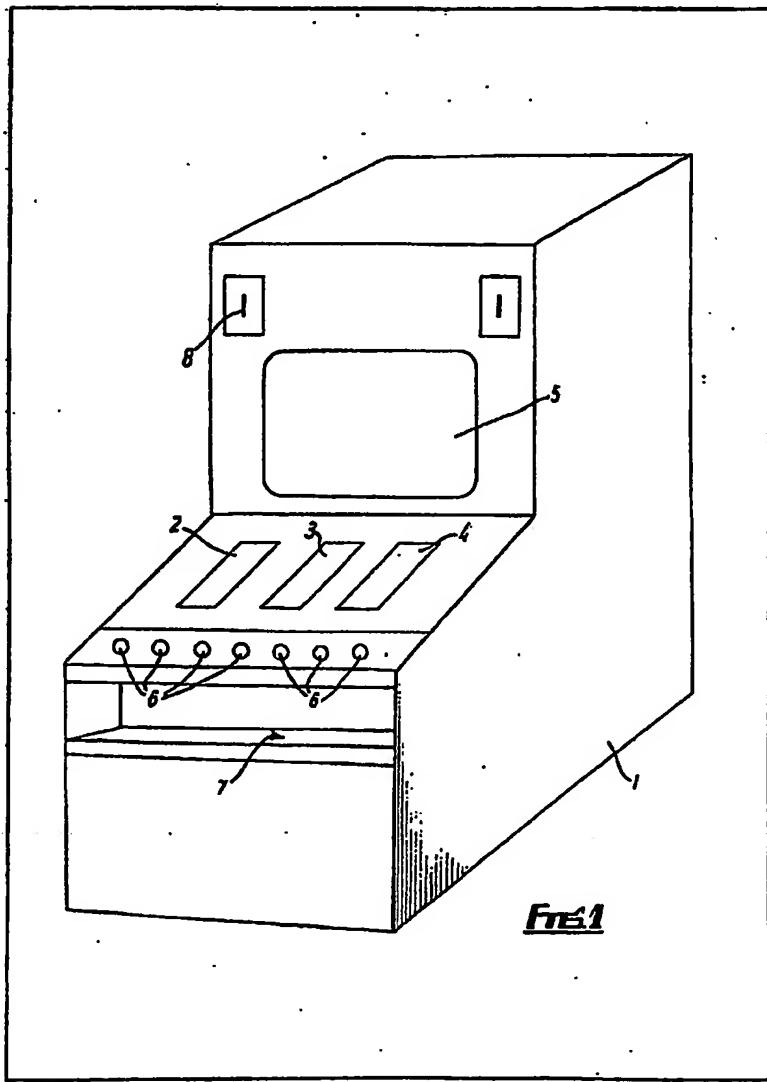
(72) Inventors
 Michael John Hurst,
 John Graham Smith,
 Ian Richard Walker

(74) Agents
 Wilson, Gunn, Ellis & Co.,
 41—51 Royal Exchange,
 Cross Street, Manchester
 M2 7BD

(54) Amusement machine

(87) An amusement machine of the type commonly referred to as a fruit machine includes a spinning reel mechanism viewable through a window or windows (2, 3, 4) in a housing (1) of the machine, in

combination with a video display screen (5) operatively connected to the reel mechanism, controlling circuitry and a pay-out mechanism, the circuitry being operative to control the display of at least one feature which comes into operation when a certain combination of symbols is displayed by the reels.



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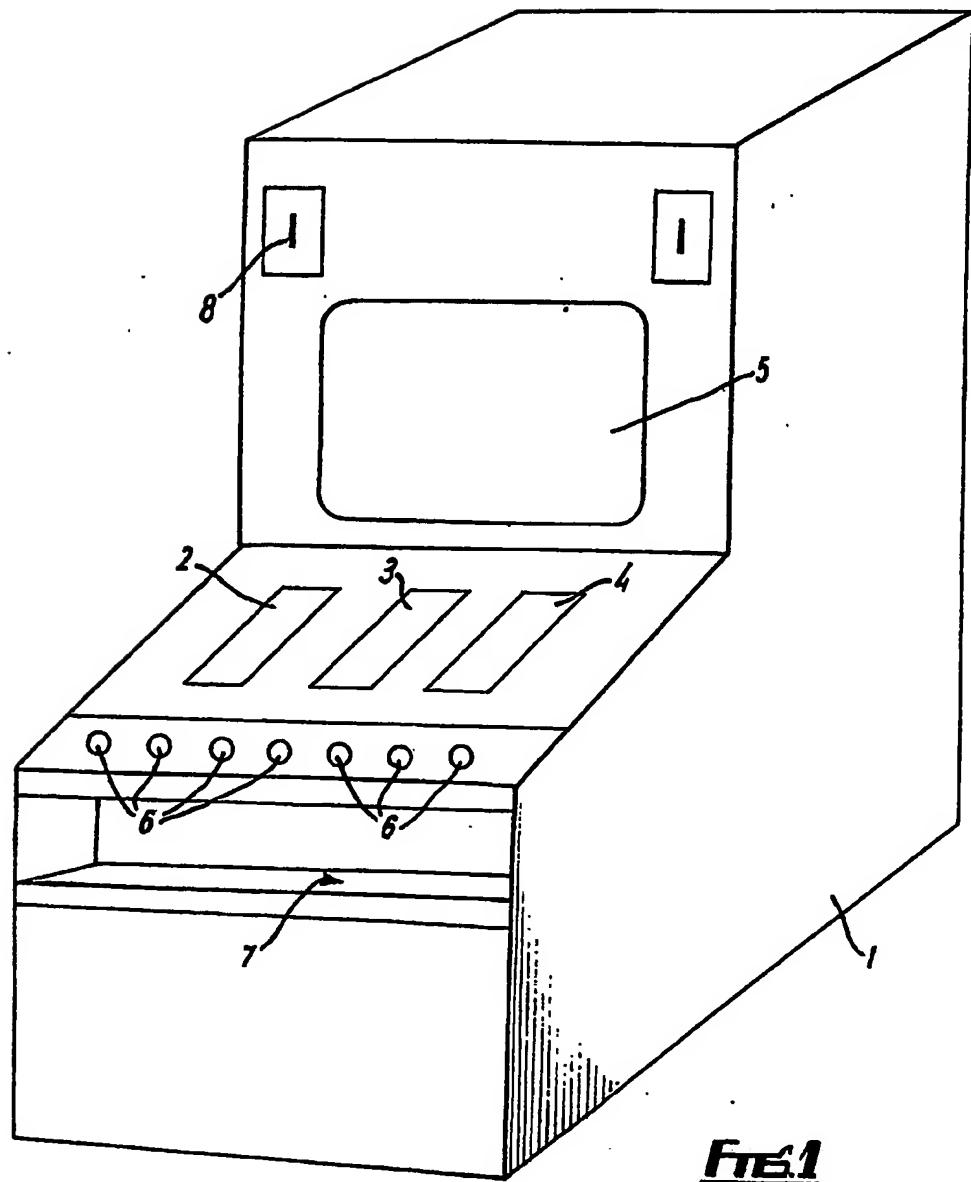
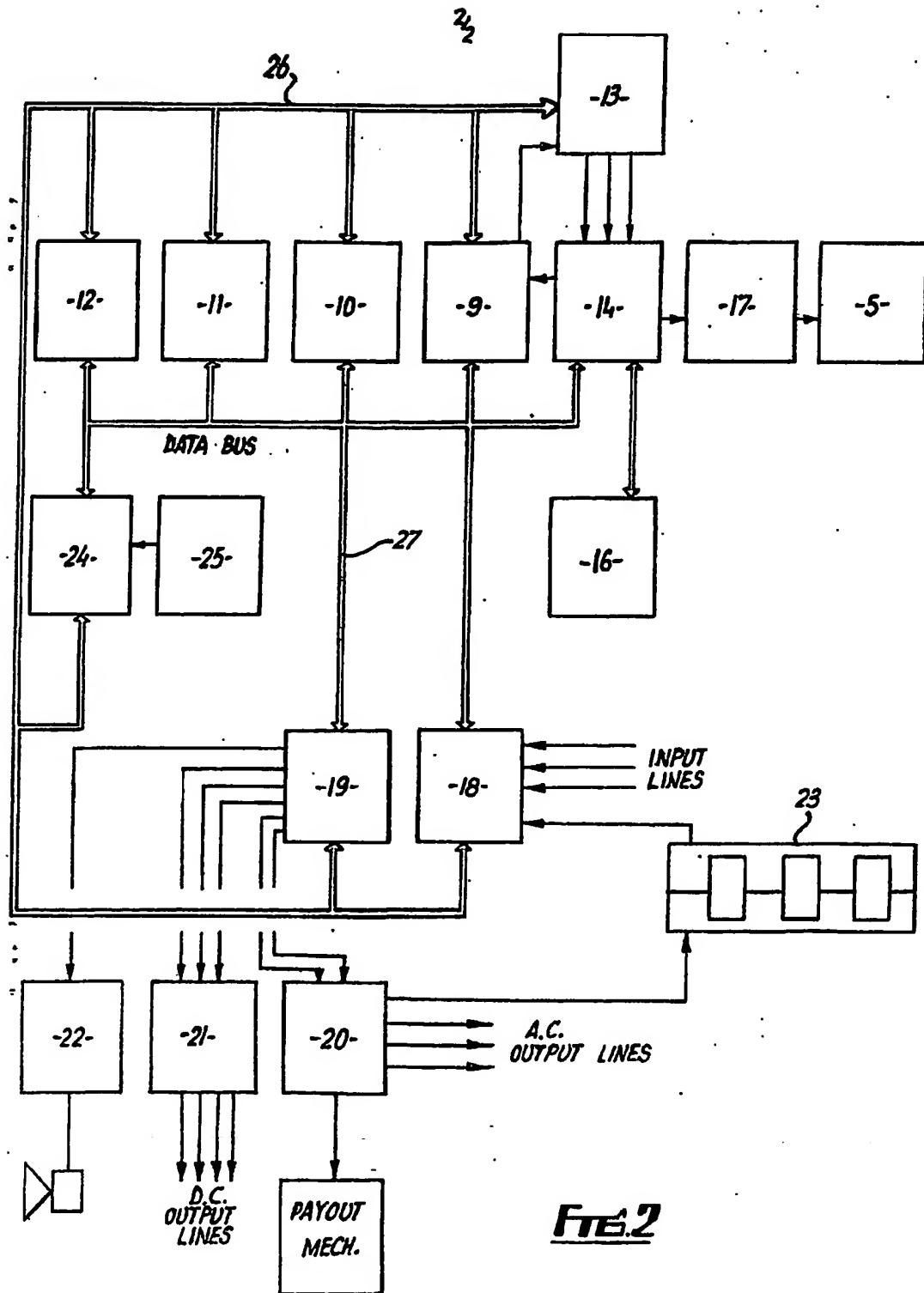


FIG.1

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SPECIFICATION

Amusement machine

This invention relates to an amusement machine of the type commonly called a fruit machine, wherein a player can insert a coin or counter, operate the machine and win coins or counters according to the display of symbols on display means of the machine.

Conventionally, the display means of such a machine has been in the form of a plurality of reels individually rotatable about a common axis, portions of the reels being visible through a window in the housing of the machine. The player can set the reels in motion by pulling a handle or pressing a "start" button or by insertion of a coin. Such machines are in wide use and players have become familiar with them. A player can see when a particularly desirable symbol has stopped one or two positions away from a "win" position and this normally satisfies the player that he does have a chance of winning.

With recent advances in electronics, particularly micro-electronics, it has become quite feasible for the mechanical reel assembly of a fruit machine to be replaced by a video display screen (V.D.U.) connected to appropriate circuitry which will simulate the reel display on the screen. Such a machine has several advantages in that the mode of its operation can be changed easily by altering its programming and it has no mechanical parts to go wrong.

Also special win features can be easily incorporated in the programming to be displayed on the screen in place of the real images. This has the advantage that the machine can be smaller. A conventional reel machine with two or more different light and/or press-button containing features tends to be rather large. However, machines in which the reel assembly is replaced by a V.D.U. have suffered severely from adverse reaction from players. This is because players cannot see the reels and the positions of various symbols near to the winning position and they tend to think that they have been cheated and thus soon lose interest in such machines.

An object of the present invention, therefore, is to provide a fruit machine which has the advantages of a "video" machine without losing the confidence which players have built up in reel machines.

Accordingly, the invention provides an amusement machine including a spinning reel mechanism viewable through a window in a housing of the machine, in combination with a video display screen operatively connected to the reel mechanism, controlling circuitry and a payout mechanism, the circuitry being operative to control the display of at least one feature which comes into operation when a certain combination of symbols is displayed by the reels.

Preferably the screen also has a static or semi-static display mode showing the winning combinations and their win values the various features possible and giving other information to

the player. It is even possible to display advertising material during times when the machine is not being played.

Advantageously several features are possible and can be displayed and played individually or separately.

Features can include "gamble" features where a player can gamble a small win by pressing a button or otherwise actuating the machine or "skill" features where a player can increase his winnings by competing with the machine.

The invention will be described further, by way of example, with reference to Figures 1 and 2 of the accompanying drawings, of which

Fig. 1 is a perspective view of an amusement machine in accordance with the invention; and Fig. 2 is a block diagram of the control system of the machine illustrated in Figure 1.

The preferred embodiment of the amusement machine of the invention illustrated in Fig. 1

incorporates a housing 1, a bank of reels of conventional form mounted for rotation about a common axis, portions of the reels being visible through windows 2, 3, 4 in the casing 1. Above the windows 2, 3, 4 is disposed a video display screen 5 which is electrically connected to the reel unit, to a plurality of buttons 6 on the casing 1 below the windows, to programmable electronic control circuitry (not shown) and to a payout mechanism (not shown). A tray 7 is provided to collect coins or counters paid out by the machine.

After the insertion of coins or counters into the slot 8 by a player, the screen 5 displays winning symbol combinations attainable and the number of plays paid for. The game sequence may now be started by pressing a start button which is one of the buttons 6, the reel mechanism is started and operates in conventional manner. Three operating aspects of this machine will be described.

According to the first aspect whenever the reels

stop with a symbol combination giving a small win, for example twenty pence, a "collect" or "gamble" feature can become operative on the screen, the player choosing to collect his win or gamble it, the gamble being represented by a

sequence of "lights" on the screen indicating "even," "double," "treble," "nothing," or other alternative variations. After a winning gamble the player's win (if any) is displayed and he can be paid out or may be allowed to gamble again up to a maximum win limit.

A second aspect can become operative when three symbols such as space ships appear on the win line. This causes the screen to display a maze through which the player must steer a space craft

using control buttons to control the craft's direction and speed. A fuel gauge is indicated on the screen the player must negotiate the maze before his fuel runs out. If his fuel runs out the craft explodes. The player must also avoid alien

space craft which will destroy his craft. Successful negotiation of the maze awards a "win" the value of which is dependent on the amount of fuel remaining.

A third aspect can be independent of the

symbols occurring on the win line and appears on the screen at random after a game. Such a feature may consist of a reproduction of the reel display in the window, the player may then press the start button to cause a simulated slow spin of the reel display on the screen. He then has a fixed time period in which to stop the reels by pressing further buttons, in an attempt to achieve a winning symbol combination on the win line. A win achieved in this way may then be "collected" or "gambled" in the normal manner.

Naturally, the number and the nature of the features available on the V.D.U. is limited only by the ingenuity of the devisers of the features and the amount of and cost of the circuitry required.

In a further possible variation the reels could merely serve to generate combinations of symbols indicating which of a series of feature games is to be played on the video screen, the games varying in the degree of difficulty and/or degree of skill required to win.

Many other variations are possible.

A further V.D.U. display variation relates to time intervals between plays. When the machine is not in use the screen will alternately display features available on the machine and some other form of message. This message may take the form of advertising material relating to the services of local traders and/or any other form of message which the owners of the premises in which the machine is sited wish to display to machine players or any other person in the vicinity of the machine.

A block diagram illustrating the control system of the machine is shown in Figure 2. The control system comprises a central processor unit 9 which controls all aspects of the operation of the machine. A main read only memory 10 contains a fixed program which determines the identity and function of the machine. A random access memory 11 serves as a temporary data storage facility for the central processor unit 9, storing data such as the number of games paid for, positional information of the reels, data concerning progress through a featured game and the accumulated value of featured and other wins. A record of the number of coins or tokens which have been inserted into and released from the machine, the number of games played, the length of time the machine has been in operation and any other data convenient for efficient working of the machine are stored in the random access memory 11. A second random access memory 12 serves to store the text of messages or advertising material displayed on the V.D.U. Other forms of storage such as tapes or discs may be provided for such messages or material. Both random access memories 11, 12 are retained when the main power supply is switched off by a back-up battery power supply (not shown).

A video display processor logic element 13 which is under control by the central processor unit 9, serves to control the mode of operation of a video display processor 14.

Three modes of V.D.U. display are possible, that

is, full colour display, colour graphics and text. The video display processor 14 controls all aspects of the video display format and generates all signals necessary to operate the V.D.U. 5. A random access memory 16 stores data which defines the V.D.U. image. In use the contents of the memory 16 are constantly being refreshed and updated by the central processor unit 9 via the video display processor 14. Video, drive circuitry 17 serves to convert signals from the video display processor 14 to levels which are suitable for driving the V.D.U. 5.

The V.D.U. 5 comprises a cathode ray tube and ancillary circuitry necessary to drive the tube. The area of the display may be limited by the size of the cathode ray tube, although a projection display device may alternatively be used. The latter may provide a display in excess of 250 cm by 250 cm in size. An inputs controller 18 serves to accept input from the player control buttons 6, coin or token acceptor mechanism 8, reel assembly and coin or token level sensors (not shown). This unit 18 operates under control by the central processor unit 9. An outputs controller 19 also operates under control by the central processor unit 9 and provides the signals necessary to control all outputs. A.C. drive circuitry 20 serves to provide alternating current supplies to drive electric motors solenoids and electromechanical counters (not shown). D.C. drive circuitry 21 provides direct current supplies to drive such devices as indicator lamps (not shown) in the player control buttons 6. An audio amplifier 27 serves to amplify audio signals from the outputs controller 19 and passes them to a loudspeaker to provide sound effects related to the game played. The reel assembly 23 may be of conventional type, driven by electric motors (not shown) and indexed by solenoids (not shown).

A keyboard adaptor 24 provides an interface to link an external keyboard 25 to the control system. The external keyboard 25 may be hand held and serves a dual purpose. A machine owner can, by plugging the keyboard 25 into a socket in the machine (not shown) and by pressing the appropriate keys, obtain a video display of all coin inputs and outputs from the machine. This enables the financial performance of the machine to be determined. In addition the owner of the machine can alter the contents of the random access memory 12 and thereby change the display of advertising material or messages displayed on the V.D.U. 5. An address bus 26 provides a series of connections by which the central processor unit 9 can transmit coded messages to actuate specific component parts of the control system. A data bus 27 provides a series of connections which allow a two way exchange of data between the central processor unit 9 and a specifically addressed component part of the control system.

CLAIMS

1. An amusement machine including spinning reel mechanisms viewable through a window in a housing of the machine, in combination with a

video display screen operatively connected to the reel mechanism, controlling circuitry and a payout mechanism, the circuitry being operative to control the display of at least one feature which

5 comes into operation when a certain combination of symbols is displayed by the reels.

2. An amusement machine as claimed in claim 1, wherein the controlling circuitry is operative to provide a static or semi-static display upon the

10 screen showing operating aspects of the machine.

3. An amusement machine as claimed in claim 1 or 2, wherein the controlling circuitry is operative to provide a static or semi-static display upon the screen showing winning combinations and the values thereof.

15 4. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to provide a display upon the screen of a message such as advertising material when the machine is not being played.

5. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to permit a player to gamble a small win by actuating an appropriate control.

20 6. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to permit a player to increase his winnings by competing with the machine.

7. An amusement machine as claimed in any

25 30 preceding claim, wherein the controlling circuitry is operative to provide a display upon the screen of a number of games paid for.

8. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry

35 is operative to provide a game of skill displayed upon the screen.

9. An amusement machine as claimed in claim

8, wherein the controlling circuitry is operative when a particular combination of symbols is

40 displayed by the reel mechanism to display said game of skill.

10. An amusement machine as claimed in claims 8 or 9, wherein a simulation of the reel mechanism is displayed upon the screen.

45 11. An amusement machine as claimed in any of claims 8, 9 or 10, wherein the controlling circuitry is operative to display a selection of games each requiring a different degree of skill.

12. An amusement machine as claimed in

50 claim 11, wherein said selection is dependent upon a combination of symbols displayed by the reel mechanism.

13. An amusement machine as claimed in any preceding claim, incorporating a central

55 processing unit and a memory facility accessible to the central processing unit.

14. An amusement machine as claimed in claim 13, wherein the central processing unit produces a display upon the screen, in accordance with inputted information and a program in the memory.

15. An amusement machine as claimed in claim 14 or 15, incorporating means for inputting information into the circuitry.

60 16. An amusement machine as claimed in any of claims 13 to 15, wherein the central processor unit is arranged to address the display screen and is connected to receive signals from an inputting facility connected to it.

65 17. An amusement machine substantially as hereinbefore described with reference to and as illustrated in Figs. 1 and 2 of the accompanying drawings.

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(71) Applicants

Coin Operated Parts
Service Limited,
Meadow Mill, Water
Street, Stockport,
Cheshire SK1 2BU

(72) Inventors

Michael John Hurst,
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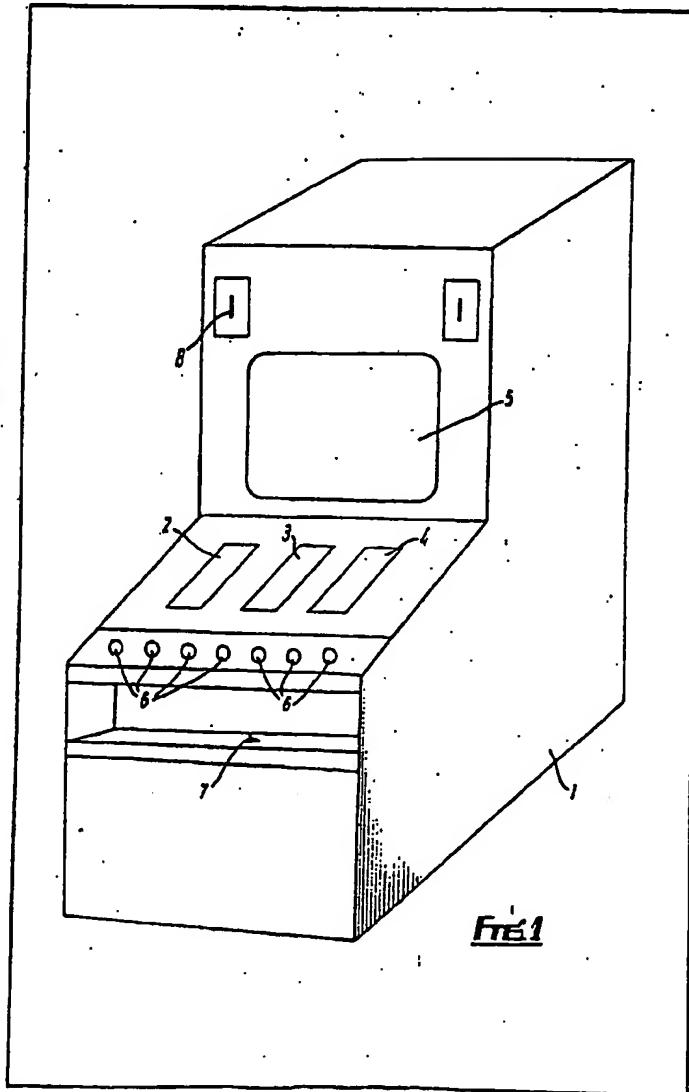
(74) Agents

Wilson, Gunn, Ellis & Co.,
41-51 Royal Exchange,
Cross Street, Manchester
M2 7BD

(54) Amusement machine

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which comes into operation when a
certain combination of symbols is
displayed by the reels.



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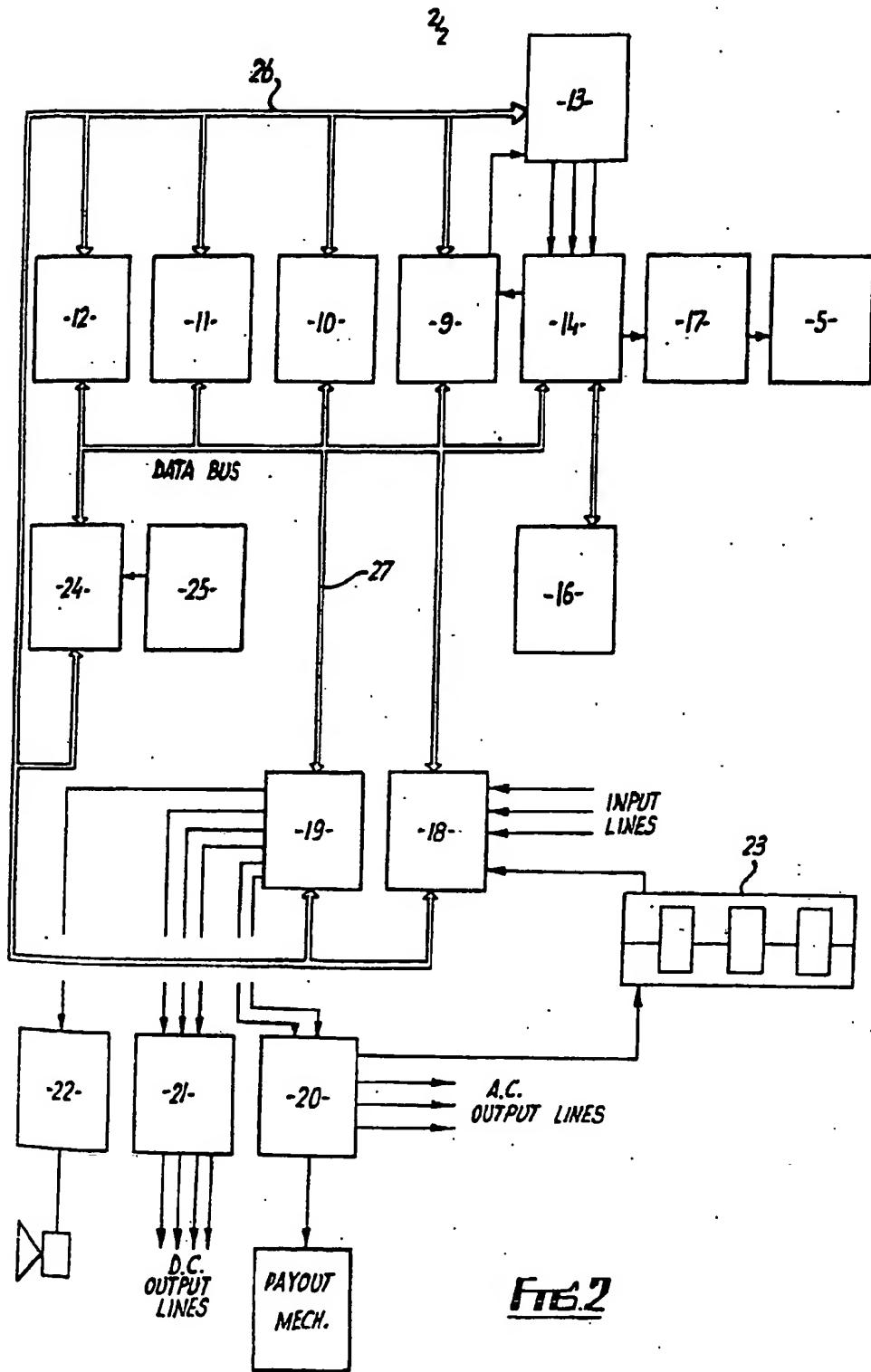


FIG. 2

SPECIFICATION
Amusement machine

This invention relates to an amusement machine of the type commonly called a fruit machine, wherein a player can insert a coin or counter, operate the machine and win coins or counters according to the display of symbols on display means of the machine.

Conventionally, the display means of such a machine has been in the form of a plurality of reels individually rotatable about a common axis, portions of the reels being visible through a window in the housing of the machine. The player can set the reels in motion by pulling a handle or pressing a "start" button or by insertion of a coin. Such machines are in wide use and players have become familiar with them. A player can see when a particularly desirable symbol has stopped one or two positions away from a "win" position and this normally satisfies the player that he does have a chance of winning.

With recent advances in electronics, particularly micro-electronics, it has become quite feasible for the mechanical reel assembly of a fruit machine to be replaced by a video display screen (V.D.U.) connected to appropriate circuitry which will simulate the reel display on the screen. Such a machine has several advantages in that the mode of its operation can be changed easily by altering its programming and it has no mechanical parts to go wrong.

Also special win features can be easily incorporated in the programming to be displayed on the screen in place of the reel images. This has the advantage that the machine can be smaller. A conventional reel machine with two or more different light and/or press-button containing features tends to be rather large. However, machines in which the reel assembly is replaced by a V.D.U. have suffered severely from adverse reaction from players. This is because players cannot see the reels and the positions of various symbols near to the winning position and they tend to think that they have been cheated and thus soon lose interest in such machines.

An object of the present invention, therefore, is to provide a fruit machine which has the advantages of a "video" machine without losing the confidence which players have built up in reel machines.

Accordingly, the invention provides an amusement machine including a spinning reel mechanism viewable through a window in a housing of the machine, in combination with a video display screen operatively connected to the reel mechanism, controlling circuitry and a payout mechanism, the circuitry being operative to control the display of at least one feature which comes into operation when a certain combination of symbols is displayed by the reels.

Preferably the screen also has a static or semi-static display mode showing the winning combinations and their win values the various features possible and giving other information to

the player. It is even possible to display advertising material during times when the machine is not being played.

Advantageously several features are possible and can be displayed and played individually or separately.

Features can include "gamble" features where a player can gamble a small win by pressing a button or otherwise actuating the machine or "skill" features where a player can increase his winnings by competing with the machine.

The invention will be described further, by way of example, with reference to Figures 1 and 2 of the accompanying drawings, of which

Fig. 1 is a perspective view of an amusement machine in accordance with the invention; and

Fig. 2 is a block diagram of the control system of the machine illustrated in Figure 1.

The preferred embodiment of the amusement machine of the invention illustrated in Fig. 1 incorporates a housing 1, a bank of reels of conventional form mounted for rotation about a common axis, portions of the reels being visible through windows 2, 3, 4 in the casing 1. Above the windows 2, 3, 4 is disposed a video display screen 5 which is electrically connected to the reel unit, to a plurality of buttons 6 on the casing 1 below the windows, to programmable electronic control circuitry (not shown) and to a payout mechanism (not shown). A tray 7 is provided to collect coins or counters paid out by the machine.

After the insertion of coins or counters into the slot 8 by a player, the screen 5 displays winning symbol combinations attainable and the number of plays paid for. The game sequence may now be started by pressing a start button which is one of the buttons 6, the reel mechanism is started and operates in conventional manner. Three operating aspects of this machine will be described.

According to the first aspect whenever the reels stops with a symbol combination giving a small win, for example twenty pence, a "collect" or "gamble" feature can become operative on the screen, the player choosing to collect his win or gamble it, the gamble being represented by a sequence of "lights" on the screen indicating "even," "double," "treble," "nothing," or other alternative variations. After a winning gamble the player's win (if any) is displayed and he can be paid out or may be allowed to gamble again up to a maximum win limit.

A second aspect can become operative when three symbols such as space ships appear on the win line. This causes the screen to display a maze through which the player must steer a space craft using control buttons to control the craft's direction and speed. A fuel gauge is indicated on the screen the player must negotiate the maze before his fuel runs out. If his fuel runs out the craft explodes. The player must also avoid alien space craft which will destroy his craft. Successful negotiation of the maze awards a "win" the value of which is dependent on the amount of fuel remaining.

A third aspect can be independent of the

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symbols occurring on the win line and appears on the screen at random after a game. Such a feature may consist of a reproduction of the reel display in the window, the player may then press the start 5 button to cause a simulated slow spin of the reel display on the screen. He then has a fixed time period in which to stop the reels by pressing further buttons. In an attempt to achieve a winning symbol combination on the win line. A win 10 achieved in this way may then be "collected" or "gambled" in the normal manner.

Naturally, the number and the nature of the features available on the V.D.U. is limited only by the ingenuity of the devisers of the features and 15 the amount of and cost of the circuitry required.

In a further possible variation the reels could merely serve to generate combinations of symbols indicating which of a series of feature games is to be played on the video screen, the games varying 20 in the degree of difficulty and/or degree of skill required to win.

Many other variations are possible.

A further V.D.U. display variation relates to time intervals between plays. When the machine is not 25 in use the screen will alternately display features available on the machine and some other form of message. This message may take the form of advertising material relating to the services of local traders and/or any other form of message 30 which the owners of the premises in which the machine is sited wish to display to machine players or any other person in the vicinity of the machine.

A block diagram illustrating the control system 35 of the machine is shown in Figure 2. The control system comprises a central processor unit 9 which controls all aspects of the operation of the machine. A main read only memory 10 contains a fixed program which determines the identity and 40 function of the machine. A random access memory 11 serves as a temporary data storage facility for the central processor unit 9, storing data such as the number of games paid for, positional information of the reels, data 45 concerning progress through a featured game and the accumulated value of featured and other wins. A record of the number of coins or tokens which have been inserted into and released from the machine, the number of games played, the length 50 of time the machine has been in operation and any other data convenient for efficient working of the machine are stored in the random access memory 11. A second random access memory 12 serves to store the text of messages or advertising material 55 displayed on the V.D.U. Other forms of storage such as tapes or discs may be provided for such messages or material. Both random access memories 11, 12 are retained when the main power supply is switched off by a back-up battery 60 power supply (not shown).

A video display processor logic element 13 which is under control by the central processor unit 9, serves to control the mode of operation of a video display processor 14.

65 Three modes of V.D.U. display are possible, that

is, full colour display, colour graphics and text. The video display processor 14 controls all aspects of the video display format and generates all signals necessary to operate the V.D.U. 5. A random access memory 16 stores data which defines the V.D.U. image. In use the contents of the memory 16 are constantly being refreshed and updated by the central processor unit 9 via the video display processor 14. Video, drive circuitry 17 serves to convert signals from the video display processor 14 to levels which are suitable for driving the V.D.U. 5.

The V.D.U. 5 comprises a cathode ray tube and ancillary circuitry necessary to drive the tube. The 80 area of the display may be limited by the size of the cathode ray tube, although a projection display device may alternatively be used. The latter may provide a display in excess of 250 cm by 250 cm in size. An inputs controller 18 serves to accept input from the player control buttons 6, coin or token acceptor mechanism 8, reel assembly and coin or token level sensors (not shown). This unit 85 18 operates under control by the central processor unit 9. An outputs controller 19 also operates under control by the central processor unit 9 and provides the signals necessary to control all 90 outputs. A.C. drive circuitry 20 serves to provide alternating current supplies to drive electric motors solenoids and electromechanical counters 95 (not shown). D.C. drive circuitry 21 provides direct current supplies to drive such devices as indicator lamps (not shown) in the player control buttons 6. An audio amplifier 27 serves to amplify audio signals from the outputs controller 19 and passes 100 them to a loudspeaker to provide sound effects related to the game played. The reel assembly 23 may be of conventional type, driven by electric motors (not shown) and indexed by solenoids (not shown).

105 A keyboard adaptor 24 provides an interface to link an external keyboard 25 to the control system. The external keyboard 25 may be hand held and serves a dual purpose. A machine owner can, by plugging the keyboard 25 into a socket in the machine (not shown) and by pressing the appropriate keys, obtain a video display of all coin inputs and outputs from the machine. This enables the financial performance of the machine to be determined. In addition the owner of the machine 110 can alter the contents of the random access memory 12 and thereby change the display of advertising material or messages displayed on the V.D.U. 5. An address bus 26 provides a series of connections by which the central processor unit 9 115 can transmit coded messages to actuate specific component parts of the control system. A data bus 27 provides a series of connections which allow a two way exchange of data between the central processor unit 9 and a specifically addressed 120 component part of the control system.

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CLAIMS

1. An amusement machine including spinning reel mechanisms viewable through a window in a housing of the machine, in combination with a

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video display screen operatively connected to the reel mechanism, controlling circuitry and a payout mechanism, the circuitry being operative to control the display of at least one feature which comes into operation when a certain combination of symbols is displayed by the reels.

5. An amusement machine as claimed in claim 1, wherein the controlling circuitry is operative to provide a static or semi-static display upon the screen showing operating aspects of the machine.

10. 3. An amusement machine as claimed in claim 1 or 2, wherein the controlling circuitry is operative to provide a static or semi-static display upon the screen showing winning combinations and the values thereof.

15. 4. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to provide a display upon the screen of a message such as advertising material when the machine is not being played.

20. 5. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to permit a player to gamble a small win by actuating an appropriate control.

25. 6. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to permit a player to increase his winnings by competing with the machine.

30. 7. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to provide a display upon the screen of a number of games paid for.

35. 8. An amusement machine as claimed in any preceding claim, wherein the controlling circuitry is operative to provide a game of skill displayed upon the screen.

9. An amusement machine as claimed in claim 8, wherein the controlling circuitry is operative when a particular combination of symbols is displayed by the reel mechanism to display said game of skill.

10. An amusement machine as claimed in claims 8 or 9, wherein a simulation of the reel mechanism is displayed upon the screen.

15. 11. An amusement machine as claimed in any of claims 8, 9 or 10, wherein the controlling circuitry is operative to display a selection of games each requiring a different degree of skill.

20. 12. An amusement machine as claimed in claim 11, wherein said selection is dependent upon a combination of symbols displayed by the reel mechanism.

25. 13. An amusement machine as claimed in any preceding claim, incorporating a central processing unit and a memory facility accessible to the central processing unit.

30. 14. An amusement machine as claimed in claim 13, wherein the central processing unit produces a display upon the screen, in accordance with inputted information and a program in the memory.

35. 15. An amusement machine as claimed in claim 14 or 15, incorporating means for inputting information into the circuitry.

40. 16. An amusement machine as claimed in any of claims 13 to 15, wherein the central processor unit is arranged to address the display screen and is connected to receive signals from an inputting facility connected to it.

45. 17. An amusement machine substantially as hereinbefore described with reference to and as illustrated in Figs. 1 and 2 of the accompanying drawings.